

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Kill and Choke Equipment

with type designation(s)

Choke, Adjustable 2 1/16"-10K

Issued to

Worldwide Oilfield Machine, Inc. (WOM)
Houston TX, United States

is found to comply with

DNV-OS-E101 Drilling Plant October 2013

DNV-OSS-201 - Verification for Compliance with Norwegian Shelf Regulations - Ch.2 Sec.7
DRILL (N), October 2014

Application :

See Page 2

This Certificate replaces D-6177 which was issued April 16th 2015

This Certificate is valid until **2019-06-30**.

Issued at **Houston** on **2016-12-14**

for **DNV GL**

DNV GL local station: **Approval CMC – Houston**

Approval Engineer: **Xiangwen (Maggie) Wang**

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Christian Nilsen
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Job Id:
Certificate No: **TAD00000K8**

Product description

- Adjustable Choke Assembly 2 1/16" 10,000 psi F.E.

Reference standards

- API 6A, 'Specification for Wellhead and Christmas Tree Equipment', 20th Edition
- NACE MR0175/ISO 15156, 'Petroleum and Natural Gas Industries – Material for Use in H₂S – Containing Environments in Oil and Gas Production, 2nd Edition

Application/Limitation

- Max. Working Pressure: 10,000 psi
- Min. Design Temperature: -20 °F
- Max. Design Temperature: 250 °F/350 °F
- Service: H₂S
- API 6A Material Class: DD, EE
- API 6A PSL: 3
- API 6A PR: 2

Note: DNV GL surveyor to check materials used in each project for Material Class trim

Type Approval documentation

Drawings:

<u>Drawing No.</u>	<u>Rev.</u>	<u>Description</u>	<u>WOM's MS</u>
AB4-N	0	Adjustable Choke Assembly 2 1/16" 10,000 psi F.E. (1" Max. Orifice)	Assy.
AB4-E	0	Adjustable choke assy. 2 1/16" 10k inlet & 2 1/16" 10k outlet (2" Max. orifice)	-
WA8001-1F	0	Body, choke	4.6.10/11
WA8001-1	2	Body, choke	-
WA8001-1A	0	Body, semi finished	4.6.10/11
WA8001-1B	0	Flange, inlet	4.6.10/11
WA8002-1	0	Body, choke	4.6.11
M0625-2A	6	Bonnet	4.6.11
SW3316	2	Bonnet extension	4.6.11
M0179-2	2	Wing nut	4.6.11
SW1319	15	Stem	4.6.119
WA7001-2	3	Bonnet	4.6.10/11
WA7001-3	2	Wing nut	4.6.11
WA7001-4	2	Stem	4.6.14/60/119
*WA8001	2	BOM. Adjustable choke assy. 2 1/16" 10,000 psi F.E. (1" Max. Orifice)	-
*WA8002	0	BOM, adjustable choke assy. 2 1/16" 10k inlet & 2 1/16" 10k outlet (2" max. orifice)	-

*For Information Only

Note: Other part numbers or updated revisions may be acceptable under this Certificate provided critical aspects of the design remain the same. Changes shall be documented and approved (via Engineering Change Notice or similar) by the Manufacturer's Engineering and/or Quality department as appropriate. DNV GL's local surveyor shall verify the change before issuance of Product Certificate.

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Calculations:

<u>Document No.</u>	<u>Rev.</u>	<u>Description</u>
-	-	Design package dated Apr. 14 th 2015
Revision of TAC – AB4-N	-	Design package dated Nov. 18th 2016

Materials:

<u>Material Spec</u>	<u>Rev.</u>	<u>Description</u>	<u>Min. Yield Strength</u>	<u>Avg. Charpy @ MDT</u>
4.6.10	11	Low alloy steel	60 ksi	20 ft-lbf
4.6.11	16	Low alloy steel	75 ksi	20 ft-lbf
4.6.14	6	410 S.S.	75 ksi	20 ft-lbf
4.6.60	6	Inconel 725	120 ksi	20 ft-lbf
4.6.119	2	410 S.S.	85 ksi	20 ft-lbf

Test carried out

1. PR-2 Test Report: DOC#ENG.DOC.CHOKE.001 REV.0

Marking of product

For traceability the following marking is to be carried out on each product:

1. Serial No.
2. Manufacturer's name or trademark.
3. Marking shall be in accordance with DNV-OS-E101 Ch. 2 Sec.7 A300 and requirements of API 6A.

Periodical assessment

For retention of the Type Approval, DNV GL's surveyor shall perform a survey every second year in accordance with DNV GL's Class Programme DNVGL-CP-0338, Section 4.

Other conditions/comments

1. Procedures related to testing, welding, NDT, and other quality control requirements are to be reviewed/approved by DNV GL's local surveyor.
2. DNV GL ref.: Project No. PP124258-81/pp150835-82

END OF CERTIFICATE